CITY OF FILER (PWS 5420021)
SOURCE WATER ASSESSMENT FINAL REPORT

June 26, 2001

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for the City of Filer,* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The City of Filer drinking water system (PWS 5420021) consists of four ground water well sources; Well #1, Well #2, Well #3, and Well #5.

The following inorganic contaminants (IOCs) have been detected in the sampled water. In December 1997 and again in August 2000, arsenic was detected in all the wells at concentrations of 0.010 milligrams per liter (mg/l) to 0.030 mg/l. The Maximum Contaminant Level (MCL) for arsenic is currently 0.05 mg/l. The United States Environmental Protection Agency (EPA) is in the process of lowering the MCL for arsenic in the near future to a level of about 0.010 mg/l. Since the arsenic concentrations appear to be a natural constituent of the aquifer, the City of Filer will have to deal with this problem. From February 1994 to August 2000, nitrate levels in the wells ranged from 1.75 mg/l to 4.82 mg/l. Though the nitrate concentrations do not currently approach the MCL for nitrate (10 mg/l), Well #2 does show an upward trend of nitrate concentrations (statistical significance of 88%) for the measured time frame. Additional IOCs such as selenium, fluoride, and barium have been detected in the sampled drinking water, but at levels well below the MCLs for those contaminants.

In August 1993 and October 1999, the volatile organic contaminants (VOCs) total trihalomethanes (THM) were detected in Well #1 and Well #5. These contaminants are associated with the chlorination process and not the actual ground water. The VOC tetracloroethylene, commonly referred to as PCE, was detected in a composite sample of Wells #2 and #3 (August 1993) and Well #3 (December 1996) at the concentrations of 1 part per billion (ppb), well below the MCL for PCE of 5 ppb. Additionally, in April 1999, Well #3 water recorded the repeat detection of total coliform bacteria. No synthetic organic contaminants (SOCs) were detected in the wells.

Each of the delineations for the four city wells is different, leading to differences in potential contaminant sources and differences in available information. As such, varying agricultural land uses, the nearby location of multiple potential contaminant sources, current water quality, the hydraulic sensitivity of the aquifer, and the differing construction of the wells leads to differing susceptibilities for the different wells to the different types of contaminants. In terms of total susceptibility, Wells #1, #2, and #3 rated high for all categories. Well #5 rated high for IOCs and moderate for all other contaminants.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the City of Filer, source water protection activities should first focus on correcting deficiencies, if any exist, outlined in the Sanitary Survey. Since total coliform bacteria were detected in the Well #3 water and the distribution system, the City of Filer should maintain their disinfection program, which could be used to treat

this problem. However, the City of Filer should be aware that current disinfection practices have led to the detection of THM in the water. This should be carefully monitored. Any spills from the potential contaminant sources listed in Tables 1 through 4 should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. The City of Filer should consider the addition of a reverse osmosis or other system to reduce the levels of natural arsenic in the water. Currently, the EPA has stated that these upgrades must be completed by the year 2006. Most of the designated areas are outside the direct jurisdiction of the City of Filer. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside the direct jurisdiction of the City of Filer. Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE CITY OF FILER, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings, used to develop this assessment, is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The City of Filer wells are community wells that serve approximately 1700 people through approximately 625 connections. The wells are located in Twin Falls County, to the east of Salmon Falls Creek and to the south of the Snake River (Figure 1). The public drinking water system for the City of Filer is currently comprised of four wells: Well #1, Well #2, Well #3, and Well #5.

The main IOC water chemistry issue recorded in the public water system is arsenic. The background levels, though below the current MCL, will exceed the proposed MCL of 10 ppb that is currently being assessed by EPA. The IOC nitrate has been detected in all the wells, but at levels less than ½ the current MCL. The VOC tetrachloroethylene has been detected in Well #2 and Well #3. Total trihalomethanes, a VOC associated with chlorination practices, were detected in Well #1 and Well #5. No SOCs were detected in the wells. Total coliform bacteria has been detected at Well #3 as well as in the distribution system.

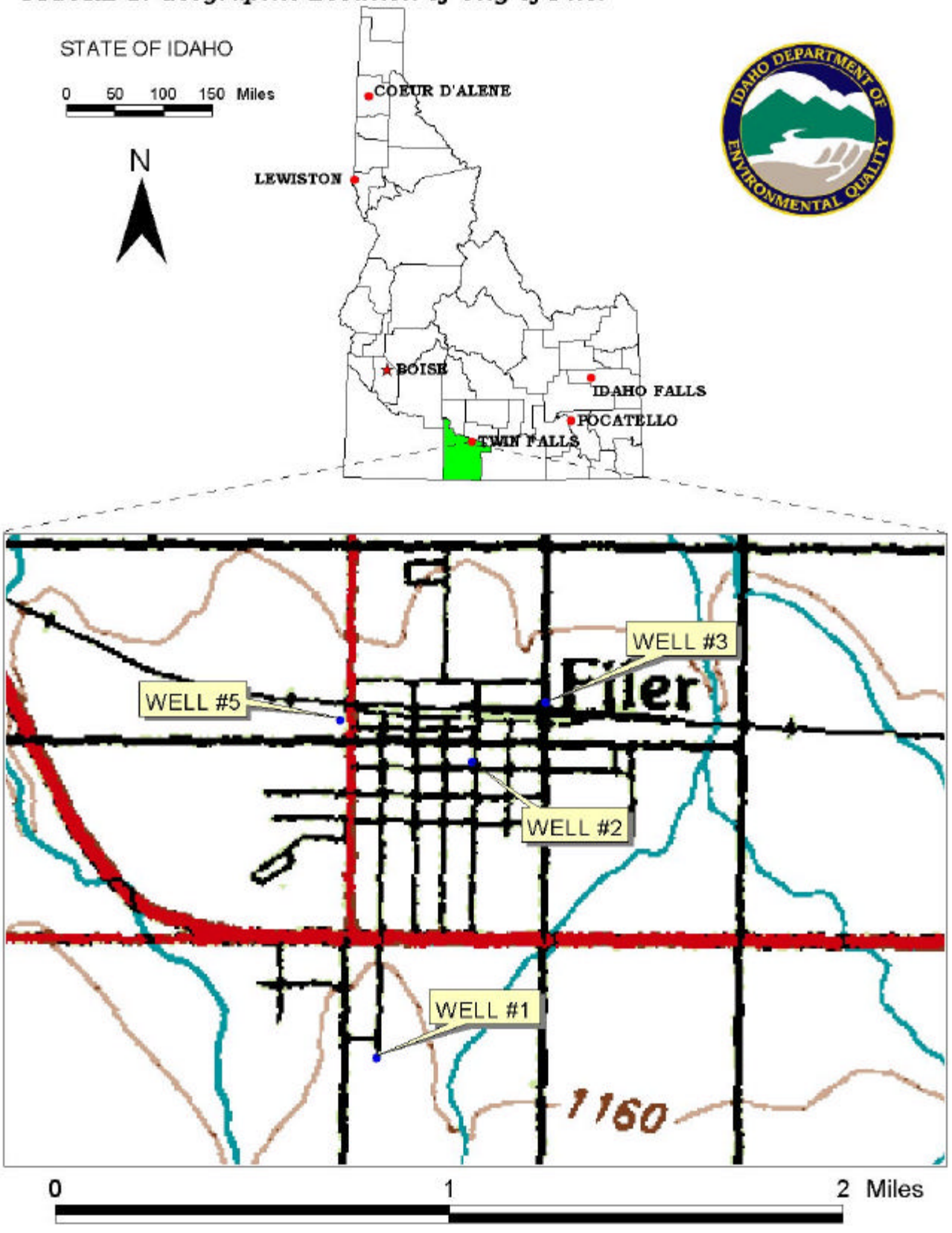
Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the time-of-travel (TOT) zones for water associated with the Salmon Falls – Rock Creek aquifer in the vicinity of the City of Filer. The computer model used site-specific data, assimilated by DEQ from a variety of sources including local area well logs and hydrogeologic reports summarized below.

All four wells extract waters from the Banbury Basalt and possibly the Idavada Volcanics. The Idavada Volcanics unit consists of welded ash and tuff, rhyolite, and some basalt flows. The Idavada Volcanics are up to 2,000 feet thick in the Filer area and contain fractures and columnar joints, allowing some mixing of the geothermal groundwater in the Idavada Volcanics with groundwater in the Banbury Basalt, which overlies the Idavada Volcanics (Lewis and Young, 1989). The Banbury Basalt is of variable thickness and is the primary non-geothermal aquifer in the Filer area (Moffat and Jones, 1984). Basalt flows fracture at the surface as they cool. The fractures occur in the horizontal direction throughout the flow. The Banbury Basalt is fractured and contains thin sedimentary interbeds. These fractures and sedimentary interbeds comprise the water producing zones in the Banbury Basalt. A shallow, perched aquifer exists above the Banbury Basalt and extends from Buhl east to Twin Falls (Cosgrove, et al., 1997). Regional ground water flow is to the north, but may vary with proximity to major creeks and the Snake River (Lewis and Young, 1989).

The delineated source water assessment areas for the City of Filer wells can best be described as corridors, approximately 1.0 mile wide and 2 miles long, extending to the south from the City of Filer (Appendix A – Figures 2, 3, 4, and 5). The actual data used by DEQ in determining the source water assessment delineation areas are available upon request.

FIGURE 1. Geographic Location of City of Filer



Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and the City of Filer and from available databases.

The dominant land use outside the City of Filer area is irrigated agriculture. Land use within the immediate area of the wellheads consists of residential property, commercial and light industrial, and agricultural. Highway 30, Cedar Draw, and the Low Line Canal also run through the area.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted in April of 2001. This involved identifying and documenting potential contaminant sources within the City of Filer Source Water Assessment Areas through the use of computer databases and Geographic Information System maps developed by DEQ. Bud Compher, the Filer Public Works Superintendent, confirmed this information.

Since the delineations all differ from one another, the potential contaminant sites located within each of the delineated source water areas differ. Descriptions of the sites are found in Tables 1 through 4 and the locations relative to the sources are depicted in Figures 2 through 5 (Appendix A). The Well #1 (Table 1, Figure 2) delineation has no potential point sources. The Well #2 (Table 2, Figure 3) and Well #3 (Table 3, Figure 4) delineations have leaking underground storage tank (LUST) sites, underground storage tank (UST) sites, commercial and municipal facilities, a Comprehensive Environmental Response Compensation and Liability Act (CERCLA) site, and a Resource Conservation Recovery Act (RCRA) site. The Well #5 (Table 4, Figure 5) delineation has a LUST site, multiple UST sites, commercial and municipal facilities, and a dairy.

Additionally, Highway 30, Cedar Draw, and the Low Line Canal are major sources that cross the delineations. If an accidental spill occurred in any of these sources, IOCs, VOCs, SOCs, or microbial contaminants could be added to the aquifer system.

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

The hydrologic sensitivity was high for all four wells (see Table 5). This reflects the well drained nature of the soil, a vadose zone composed of fractured rock, the lack of thick fine-grained layers retarding the downward movement of contaminants, and the depth to ground water of less than 300 feet.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The City of Filer drinking water system consists of four wells that extract ground water for community uses. Wells #1, #2, and #3 rated moderate susceptibility for system construction and Well #5 rated low. The 2000 Sanitary Survey found that the wellhead and surface seal were maintained in all the wells. All were protected from surface flooding. Well logs for Well #2, Well #3, and Well #5 indicate the highest production interval is greater than 100 feet below the water table. The Well #5 log also indicates that that the casing and annular seal were extended into low permeability units. Though the City of Filer wells met well construction standards at the time of installation, current standards are stricter.

The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all Public Water Systems (PWSs) to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the requirements include casing thickness, well tests, and depth and formation type that the surface seal must be installed into. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Six-inch diameter wells require a casing thickness of at least 0.288-inches, eight-inch diameter wells require a casing thickness of 0.322-inches, ten-inch diameter wells require a casing thickness of 0.365-inches, and twelve-inch diameter wells require a casing thickness of 0.375-inches. Each of the City of Filer wells received an additional point in the system construction category because they do not meet current well construction standards.

Potential Contaminant Source and Land Use

Well #1 rated high for IOCs (i.e. arsenic, nitrate), moderate for VOCs (i.e. petroleum products) and SOCs (i.e. pesticides), and low for microbial contaminants (i.e. bacteria). Irrigated agricultural land, Cedar Draw, and the Low Line Canal contributed the largest numbers of points to the contaminant inventory rating. Well #2, Well #3, and Well #5 each high for IOCs, VOCs, and SOCs and low for microbial contamination. Commercial potential contaminant sources added to the high scores. County level nitrogen fertilizer use, county level herbicide use, and total county level ag-chemical use are rated as high for all four wells. In addition, the delineations fall within a nitrate priority area.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. In this case, Well #2 automatically rated high for VOCs due to the detection of PCE in August 1993. Well #3 automatically rated high for VOCs due to the detection of PCE in December 1996 and for microbial contamination due to the repeat detection of total coliform bacteria in April 1999. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and much agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, Wells #1, #2, and #3 rated high for all categories. Well #5 rated high for IOCs and moderate for all other categories.

Table 5. Summary of the City of Filer Susceptibility Evaluation

Source	**Susceptibility Scores[1]**									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	H	M	M	L	M	H	H	H	H
Well #2	H	H	H	H	L	M	H	H(*)[2]	H	H
Well #3	H	H	H	H	L	M	H	H(*)	H	H(*)
Well #5	H	H	H	H	L	L	H	M	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
[2]H(*) = Well rated high and automatically high due to detection of VOC or total coliform bacteria

Susceptibility Summary

In terms of total susceptibility, Wells #1, #2, and #3 rated high for all categories. Well #5 rated high for IOCs and moderate for all other categories. Multiple commercial and industrial potential contaminant sources, agricultural land uses, high county wide nitrogen fertilizer use, high county wide herbicide use, Cedar Draw, the Low Line Canal, and Highway 30 contributed the most land use points to the susceptibility rating. High hydrologic sensitivity also contributed heavily to the overall scores.

The following IOCs have been detected in the sampled water. In December 1997 and again in August 2000, arsenic was detected in all the wells at concentrations of 0.010 mg/l to 0.030 mg/l. The MCL for arsenic is currently 0.05 mg/l. The EPA is in the process of lowering the MCL for arsenic in the near future to a level of about 0.010 mg/l. Since the arsenic concentrations appear to be a natural constituent of the aquifer, the City of Filer will have to deal with this problem. From February 1994 to August 2000, nitrate levels in the wells ranged from 1.75 mg/l to 4.82 mg/l. Though the nitrate concentrations do not currently approach the MCL for nitrate (10 mg/l), Well #2 does show an upward trend of nitrate concentrations (statistical significance of 88%) for the measured time frame. Additional IOCs such as selenium, fluoride, and barium have been detected in the sampled drinking water, but at levels well below the MCLs for those contaminants.

In August 1993 and October 1999, the VOCs, total trihalomethanes (THM) were detected in Well #1 and Well #5. These contaminants are associated with the chlorination process and not the actual ground water. The VOC tetracloroethylene, commonly referred to as PCE, was detected in Well #2 (August 1993) and Well #3 (December 1996) at the concentration of 1 ppb. The MCL for PCE is 5 ppb. Additionally, in April 1999, Well #3 water recorded the repeat detection of total coliform bacteria. No SOCs were detected in the wells.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For the City of Filer, source water protection activities should first focus on correcting deficiencies, if any exist, outlined in the Sanitary Survey. Since total coliform bacteria were detected in the Well #3 water and the distribution system, the City of Filer should maintain their disinfection program, which could be used to treat this problem. However, the City of Filer should be aware that current disinfection practices have led to the detection of THM in the water. This should be carefully monitored. Any spills from the potential contaminant sources listed in Tables 1 through 4 should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. The City of Filer should consider the addition of a reverse osmosis or other system to reduce the levels of natural arsenic in the water. Currently, the EPA has stated that these upgrades must be completed by the year 2006. Most of the designated areas are outside the direct jurisdiction of the City of Filer. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside the direct jurisdiction of the City of Filer. Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office	(208) 736-2190
State DEQ Office	(208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Appendix A

Delineation Figures and Potential Contaminant Tables

Figure 2. City of Filer Delineation Map and Potential Contaminant Source Locations

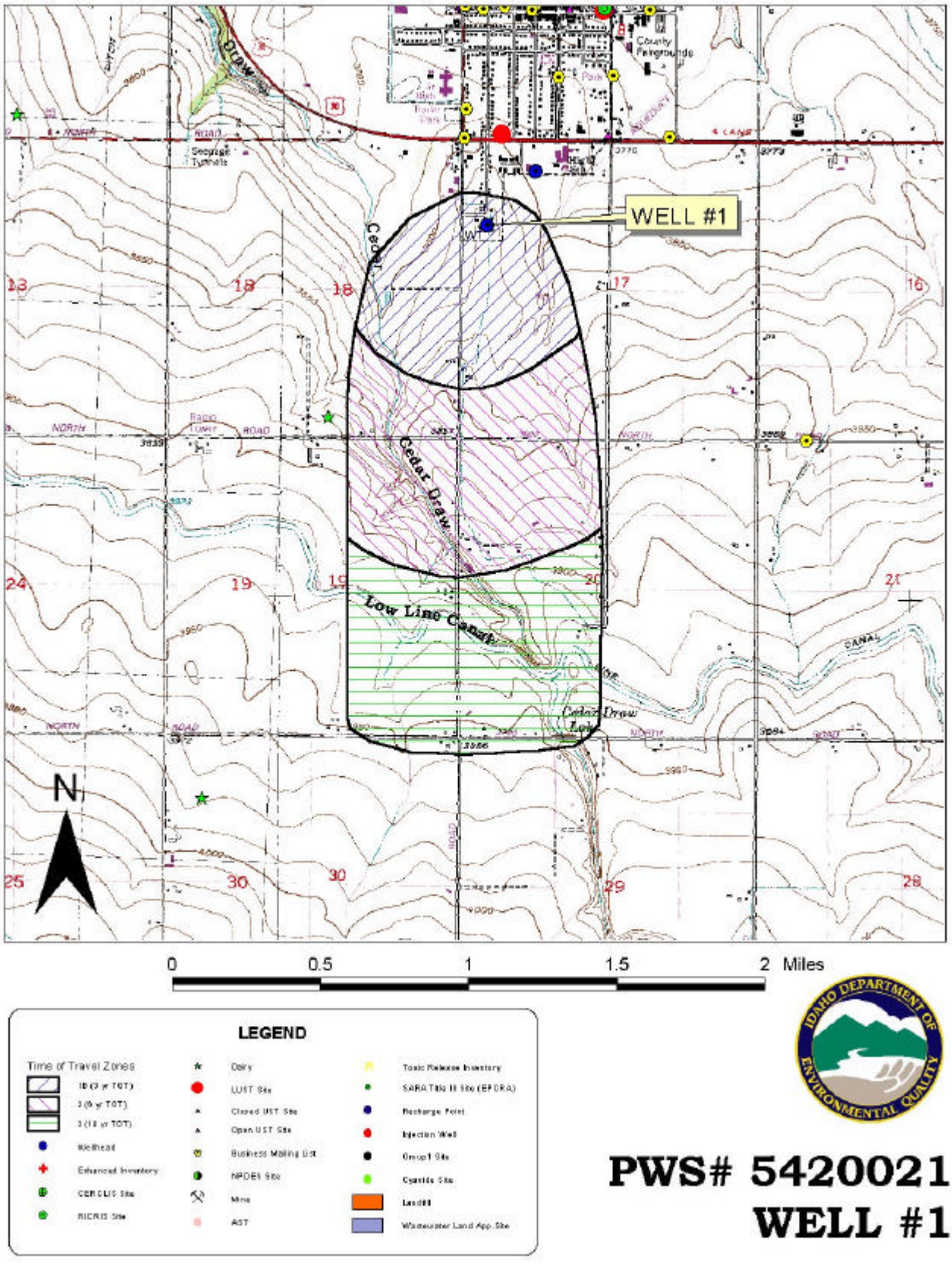


Figure 3. City of Filer Delineation Map and Potential Contaminant Source Locations

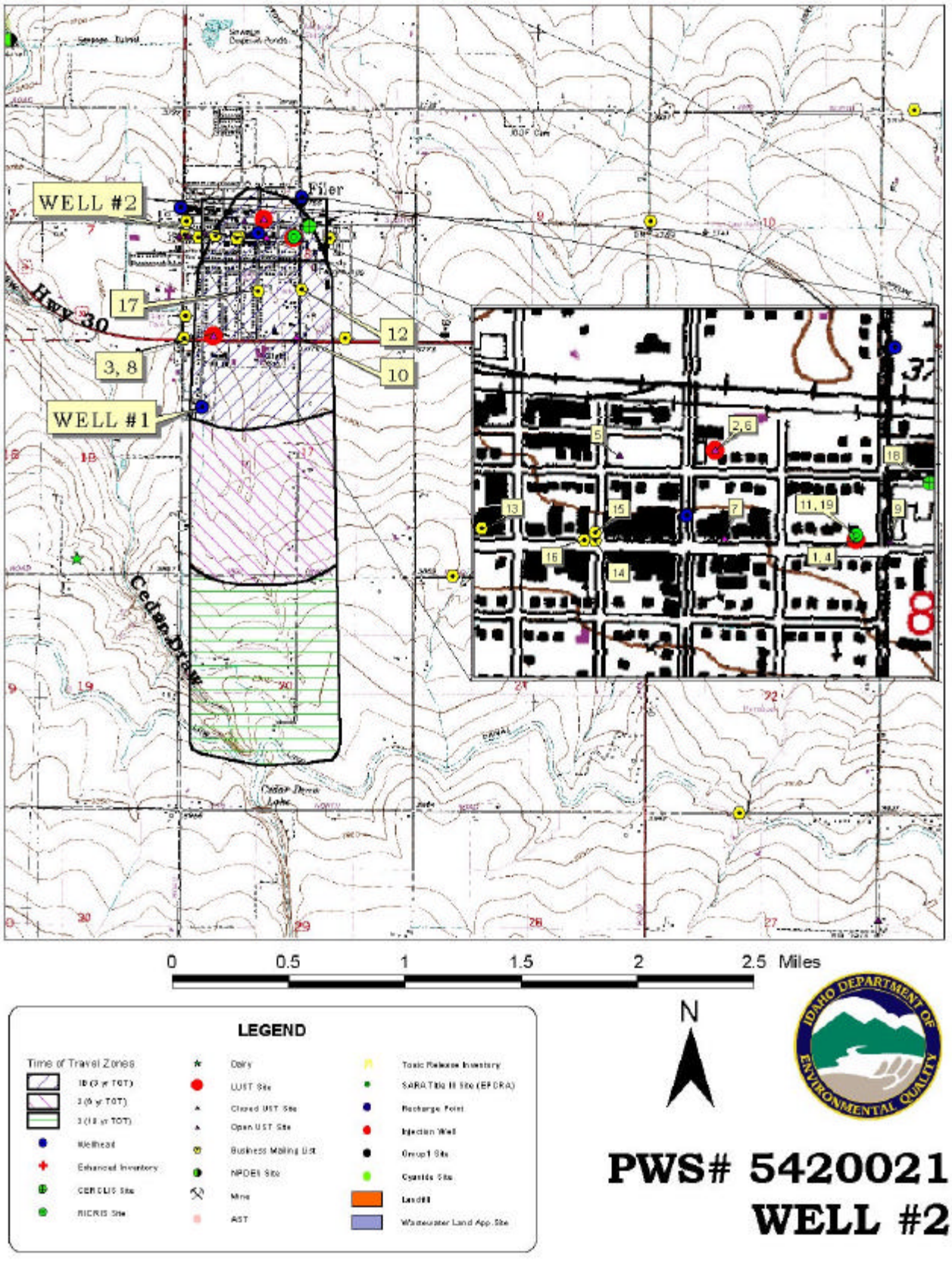


Table 1. City of Filer, Well #1, Potential Contaminant Inventory

Site #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
	Cedar Draw	0-10	GIS Map	IOC, VOC, SOC, Microbes
	Low Line Canal	6-10	GIS Map	IOC, VOC, SOC, Microbes

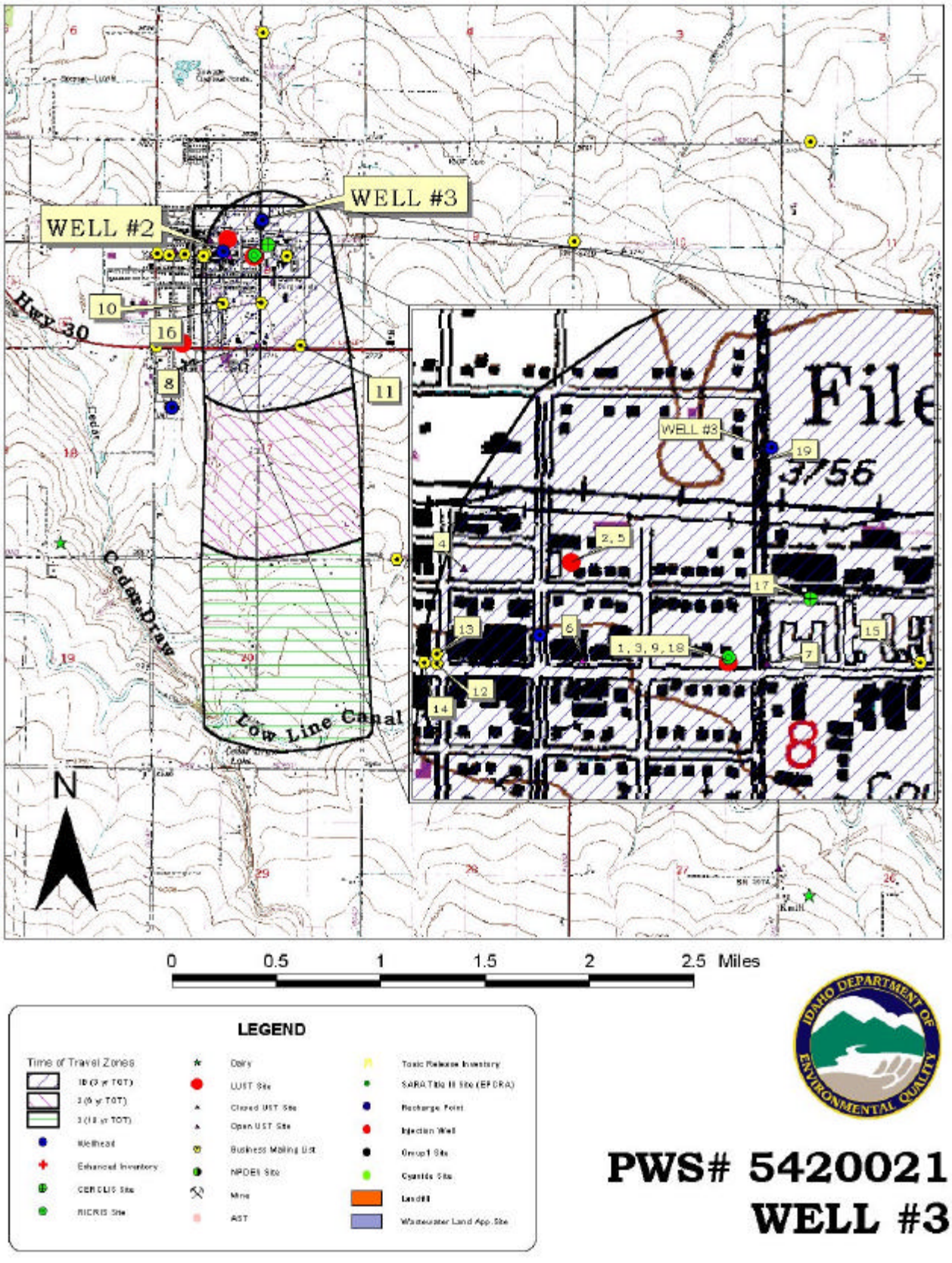
[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 2. City of Filer, Well #2, Potential Contaminant Inventory

Site #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
	Highway 30	0-3	GIS Map	IOC, VOC, SOC, Microbes
1	LUST – impact: ground water	0-3	Database Search	VOC, SOC
2	LUST – cleanup completed	0-3	Database Search	VOC, SOC
3	LUST – cleanup completed	0-3	Database Search	VOC, SOC
4 (see map id #1)	UST – closed	0-3	Database Search	VOC, SOC
5	UST – closed	0-3	Database Search	VOC, SOC
6 (see map id #2)	UST – open	0-3	Database Search	VOC, SOC
7	UST – open	0-3	Database Search	VOC, SOC
8 (see map id #3)	UST – open	0-3	Database Search	VOC, SOC
9	UST – closed	0-3	Database Search	VOC, SOC
10	UST – open	0-3	Database Search	VOC, SOC
11	Farm equipment manufacturer	0-3	Database Search	IOC, VOC, SOC
12	Automobile – repair and service	0-3	Database Search	IOC, VOC, SOC
13	Fire Department	0-3	Database Search	VOC, SOC
14	Household appliance manufacturer	0-3	Database Search	IOC, VOC, SOC
15	Janitor Service	0-3	Database Search	IOC, VOC, SOC, Microbes
16	Commercial printing shop	0-3	Database Search	IOC, VOC
17	Woodworkers	0-3	Database Search	IOC, VOC, SOC
18	CERCLA	0-3	Database Search	IOC, VOC, SOC, Microbes
19 (see map id #11)	RCRA	0-3	Database Search	IOC, VOC, SOC, Microbes
	Cedar Draw	6-10	GIS Map	IOC, VOC, SOC, Microbes
	Low Line Canal	6-10	GIS Map	IOC, VOC, SOC, Microbes

[1] LUST = leaking underground storage tank, UST = underground storage tank, CERCLA = Comprehensive Environmental Response Compensation and Liability Act, RCRA = Resource Conservation Recovery Act
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 4. City of Filer Delineation Map and Potential Contaminant Source Locations



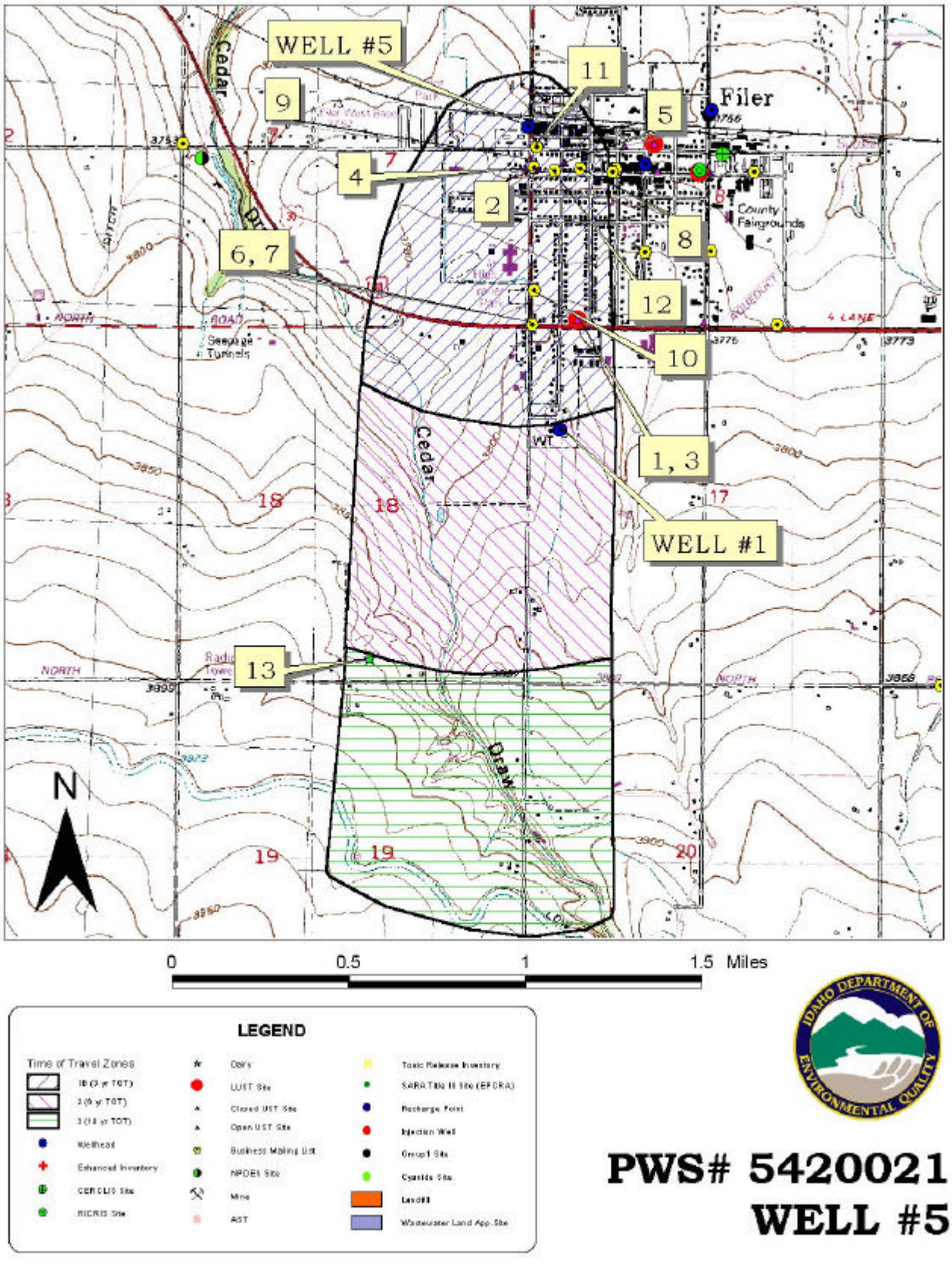
PWS# 5420021
WELL #3

Table 3. City of Filer, Well #3, Potential Contaminant Inventory

Site #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
	Highway 30	0-3	GIS Map	IOC, VOC, SOC, Microbes
1	LUST – impact: ground water	0-3	Database Search	VOC, SOC
2	LUST – cleanup completed	0-3	Database Search	VOC, SOC
3 (see map id #1)	UST – closed	0-3	Database Search	VOC, SOC
4	UST – closed	0-3	Database Search	VOC, SOC
5 (see map id #5)	UST – open	0-3	Database Search	VOC, SOC
6	UST – open	0-3	Database Search	VOC, SOC
7	UST – closed	0-3	Database Search	VOC, SOC
8	UST – open	0-3	Database Search	VOC, SOC
9	Farm equipment manufacturer	0-3	Database Search	IOC, VOC, SOC
10	Automobile – repair and service	0-3	Database Search	IOC, VOC, SOC
11	Gas station	0-3	Database Search	VOC, SOC
12	Household appliance manufacturer	0-3	Database Search	IOC, VOC, SOC
13	Janitor Service	0-3	Database Search	IOC, VOC, SOC, Microbes
14	Commercial printing shop	0-3	Database Search	IOC, VOC
15	Welding Shop	0-3	Database Search	IOC, VOC, SOC
16	Woodworkers	0-3	Database Search	IOC, VOC, SOC
17	CERCLA	0-3	Database Search	IOC, VOC, SOC, Microbes
18 (see map id #9)	RCRA	0-3	Database Search	IOC, VOC, SOC, Microbes
	Low Line Canal	6-10	GIS Map	IOC, VOC, SOC, Microbes

[1] LUST = leaking underground storage tank, UST = underground storage tank, CERCLA = Comprehensive Environmental Response Compensation and Liability Act, RCRA = Resource Conservation Recovery Act
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 5. City of Filer Delineation Map and Potential Contaminant Source Locations



PWS# 5420021
WELL #5

Table 4. City of Filer, Well #5, Potential Contaminant Inventory

Site #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
	Highway 30	0-3	GIS Map	IOC, VOC, SOC, Microbes
1	LUST – cleanup incomplete	0-3	Database Search	VOC, SOC
2	UST – closed	0-3	Database Search	VOC, SOC
3 (see map id #1)	UST – open	0-3	Database Search	VOC, SOC
4	UST – closed	0-3	Database Search	VOC, SOC
5	UST – closed	0-3	Database Search	IOC, VOC, SOC, Microbes
6	Automobile – used car dealer	0-3	Database Search	IOC, VOC, SOC
7	Door manufacturer	0-3	Database Search	IOC, VOC, SOC
8	Fire Department	0-3	Database Search	VOC, SOC
9	Welding shop	0-3	Database Search	IOC, VOC, SOC
10	Welding shop	0-3	Database Search	IOC, VOC, SOC
11	Truck – washing and cleaning	0-3	Database Search	IOC, VOC, SOC
12	Household and commercial storage	0-3	Database Search	IOC, VOC, SOC, Microbes
13	Dairy - ≤ 200 cows	6-10	Database Search	IOC, SOC
	Cedar Draw	6-10	GIS Map	IOC, VOC, SOC, Microbes
	Low Line Canal	6-10	GIS Map	IOC, VOC, SOC, Microbes

[1] LUST = leaking underground storage tank, UST = underground storage tank
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Attachment B

City of Filer
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

1. System Construction		SCORE
Drill Date	02/06/1958	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	2000
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		4

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2

Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	5	1	1	
4 Points Maximum		4	1	1	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	7	7	6

Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0

Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0

Cumulative Potential Contaminant / Land Use Score		24	17	19	8
4. Final Susceptibility Source Score		15	13	14	13
5. Final Well Ranking		High	High	High	High

1. System Construction		SCORE				
Drill Date		03/25/1954				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	2000			
Well meets IDWR construction standards		NO	1			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		NO	2			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		3			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND		2	2	2	2
Farm chemical use high		YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A		YES	NO	YES	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	8	16	15	3
(Score = # Sources X 2) 8 Points Maximum			8	8	8	6
Sources of Class II or III leacheable contaminants or		YES	5	7	4	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	0	0
Land use Zone 1B	25 to 50% Irrigated Agricultural Land		2	2	2	2
	Total Potential Contaminant Source / Land Use Score - Zone 1B		16	14	14	8
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		NO	0	0	0	
Sources of Class II or III leacheable contaminants or		YES	1	0	0	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land		2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II		3	2	2	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		YES	1	1	1	
	Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score			26	21	23	10
4. Final Susceptibility Source Score			14	13	14	13
5. Final Well Ranking			High	High	High	High

1. System Construction		SCORE				
Drill Date		04/30/1963				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	2000			
Well meets IDWR construction standards		NO	1			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		NO	2			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		3			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND		2	2	2	2
Farm chemical use high		YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A		YES	NO	YES	NO	YES
	Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	10	16	15	3
(Score = # Sources X 2) 8 Points Maximum			8	8	8	6
Sources of Class II or III leacheable contaminants or		YES	5	7	4	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	0	0
Land use Zone 1B	25 to 50% Irrigated Agricultural Land		2	2	2	2
	Total Potential Contaminant Source / Land Use Score - Zone 1B		16	14	14	8
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		NO	0	0	0	
Sources of Class II or III leacheable contaminants or		YES	1	0	0	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land		2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II		3	2	2	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		YES	1	1	1	
	Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score			26	21	23	10
4. Final Susceptibility Source Score			14	13	14	13
5. Final Well Ranking			High	High	High	High

FILER WATER WORKS — Well# : WELL #5

Public Water System Number 5420021 — 05/23/2001 11:31:05 AM

1. System Construction		SCORE				
Drill Date	10/01/1982					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	2000				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	YES	0				
Highest production 100 feet below static water level	YES	0				
Well located outside the 100 year flood plain	YES	0				
Total System Construction Score		1				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	NO	2				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
Total Hydrologic Score		6				
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2	
Farm chemical use high	YES	2	0	2		
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	9	12	13	3	
(Score = # Sources X 2) 8 Points Maximum		8	8	8	6	
Sources of Class II or III leacheable contaminants or	YES	4	5	2		
4 Points Maximum		4	4	2		
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0	
Land use Zone 1B	25 to 50% Irrigated Agricultural Land	2	2	2	2	
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	14	12	8	
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	YES	2	2	2		
Sources of Class II or III leacheable contaminants or	YES	1	0	0		
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2		
Potential Contaminant Source / Land Use Score - Zone II		5	4	4	0	
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	YES	1	1	1		
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1		
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0	
Cumulative Potential Contaminant / Land Use Score		28	23	23	10	
4. Final Susceptibility Source Score		13	12	12	11	
5. Final Well Ranking		High	Moderate	Moderate	Moderate	